

9/13/13

Goal: Use the Distributive Property to simplify expressions.

- Section 1.7 - The Distributive Property day 1

Homework: p. 50 (10-44 evens)

Section 1.7 Day 1

The distributive property

Distribution in real life:

MULTIPLICATION ACROSS ADDITION

The distributive property **MULTIPLY EACH NUMBER INSIDE THE () BY THE NUMBER OUTSIDE THE ()**

$$a(b+c) = ab+ac$$

$$4(20+6) = 4(20) + 4(6)$$

$$a(b-c) = ab-ac$$

$$(b+c)a =$$

$$ba+ca$$

$$(20+6)4$$

$$= 20(4) + 6(4)$$

$$(b-c)a =$$

$$ba-ca$$

$$\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$$

$$\frac{a-b}{c} = \frac{a}{c} - \frac{b}{c}$$

We can distribute both through multiplication
AND division.

Examples: two methods(box and lines)

$$3(x+8) = 3x+24$$

$$(5b-7)(-7) = -35b - -49$$

$$-35b + 49$$

$7 \cdot -7 = -49$

Try these on your own:

$$5(x+9) = 5x+45$$

$$(0.4+1.1c)3 = 1.2+3.3c$$

$$-12\left(3-\frac{1}{6}p\right) = -36 - \frac{-12}{6}p$$

$$-36 - -2p$$

$x \cdot x = x^2$

$$(2y-1)(-y) =$$

$$-36+2p$$

$$(2y-1)(-y)$$

$$-2y^2+y$$

$$-2y^2+y$$

So we can distribute:

- positive numbers
- negative numbers
- fractions
- variables

Now for some Division:

$$\frac{7x+2}{5} = \frac{7x}{5} + \frac{2}{5}$$

$$\frac{12p-18}{3} = \frac{12p}{3} - \frac{18}{3}$$

$$4p-6$$

You try:

$$\frac{4t-16}{3} = \frac{4t}{3} - \frac{16}{3}$$

$$\frac{4+2k}{8} = \frac{4}{8} + \frac{2k}{8}$$

$$\frac{1}{2} + \frac{1k}{4} = \frac{1}{2} + \frac{k}{4}$$

What if there isn't a number out there?

$$-(2x+3) = -2x+(-3)$$

$$-2x-3$$

$$-(3x-8y) = -3x+8y$$

You try:

$$-(a+5) = -a+(-5)$$

$$-a-5$$

$$-(-x+9) = 1x+(-9)$$

$$x-9$$

Mental math and distribution.

What is 8×4.95 ?

We can think of this as...

$$\begin{aligned} &8(5.00 - 0.05) \\ &8(5) - 8(.05) \\ &40 - .40 = 39.60 \end{aligned}$$

Summary...

When we distribute, we must distribute to all terms. We only distribute through multiplication and division.

When we do not see a number in front of parentheses, there is a 1 there anyway.

We can distribute anything that we can also multiply or divide by a quantity (things inside of parentheses).

10-44 Even

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Use the Distributive Property to simplify each expression.

- | | | | |
|------------------------|----------------------|---------------------------------------|---|
| 9. $6(a + 10)$ | 10. $8(4 + x)$ | 11. $(5 + w)5$ | 12. $(2t + 3)11$ |
| 13. $10(9 - t)$ | 14. $12(2j - 6)$ | 15. $16(7b + 6)$ | 16. $(1 + 3d)9$ |
| 17. $(3 - 8c)1.5$ | 18. $(5w - 15)2.1$ | 19. $\frac{1}{4}(4f - 8)$ | 20. $6(\frac{1}{3}h + 1)$ |
| 21. $(-8z - 10)(-1.5)$ | 22. $0(3.7x - 4.21)$ | 23. $1(\frac{3}{11} - \frac{7d}{17})$ | 24. $\frac{1}{2}(\frac{1}{2}y - \frac{1}{2})$ |

See Problem 1.

Write each fraction as a sum or difference.

- | | | | |
|-------------------------|---------------------------|-------------------------|--------------------------|
| 25. $\frac{2x + 7}{5}$ | 26. $\frac{17 + 5n}{4}$ | 27. $\frac{8 - 9x}{3}$ | 28. $\frac{4y - 12}{2}$ |
| 29. $\frac{25 - 8t}{5}$ | 30. $\frac{18x + 51}{17}$ | 31. $\frac{22 - 2n}{2}$ | 32. $\frac{42w + 14}{7}$ |

See Problem 2.

Simplify each expression.

- | | | | |
|--------------------|--------------------|---------------------|---------------------|
| 33. $-(20 + d)$ | 34. $-(-5 - 4y)$ | 35. $-(9 - 7c)$ | 36. $-(-x + 15)$ |
| 37. $-(18a - 17b)$ | 38. $-(2.1c - 4d)$ | 39. $-(-m + n + 1)$ | 40. $-(x + 3y - 3)$ |

See Problem 3.

Use mental math to find each product.

- | | | | |
|--------------------|---------------------|---------------------|--------------------|
| 41. 5.1×8 | 42. 3×7.25 | 43. 299×3 | 44. 4×197 |
| 45. 3.9×6 | 46. 5×2.7 | 47. 6.15×4 | 48. 6×9.1 |

See Problem 4.